

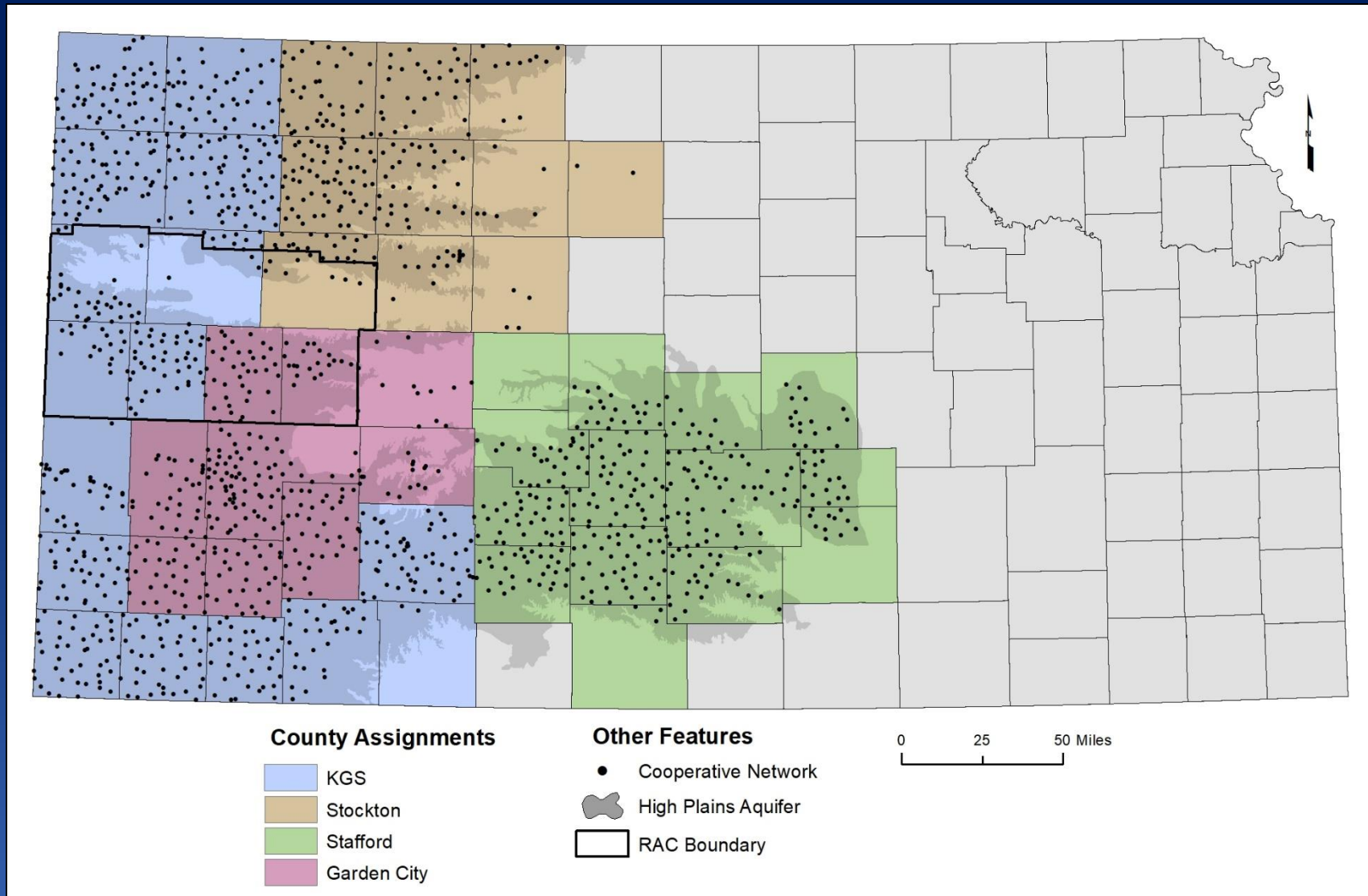
Updates on the Kansas High Plains Aquifer

Upper Smoky Hill RAC Meeting
April 6th, 2021



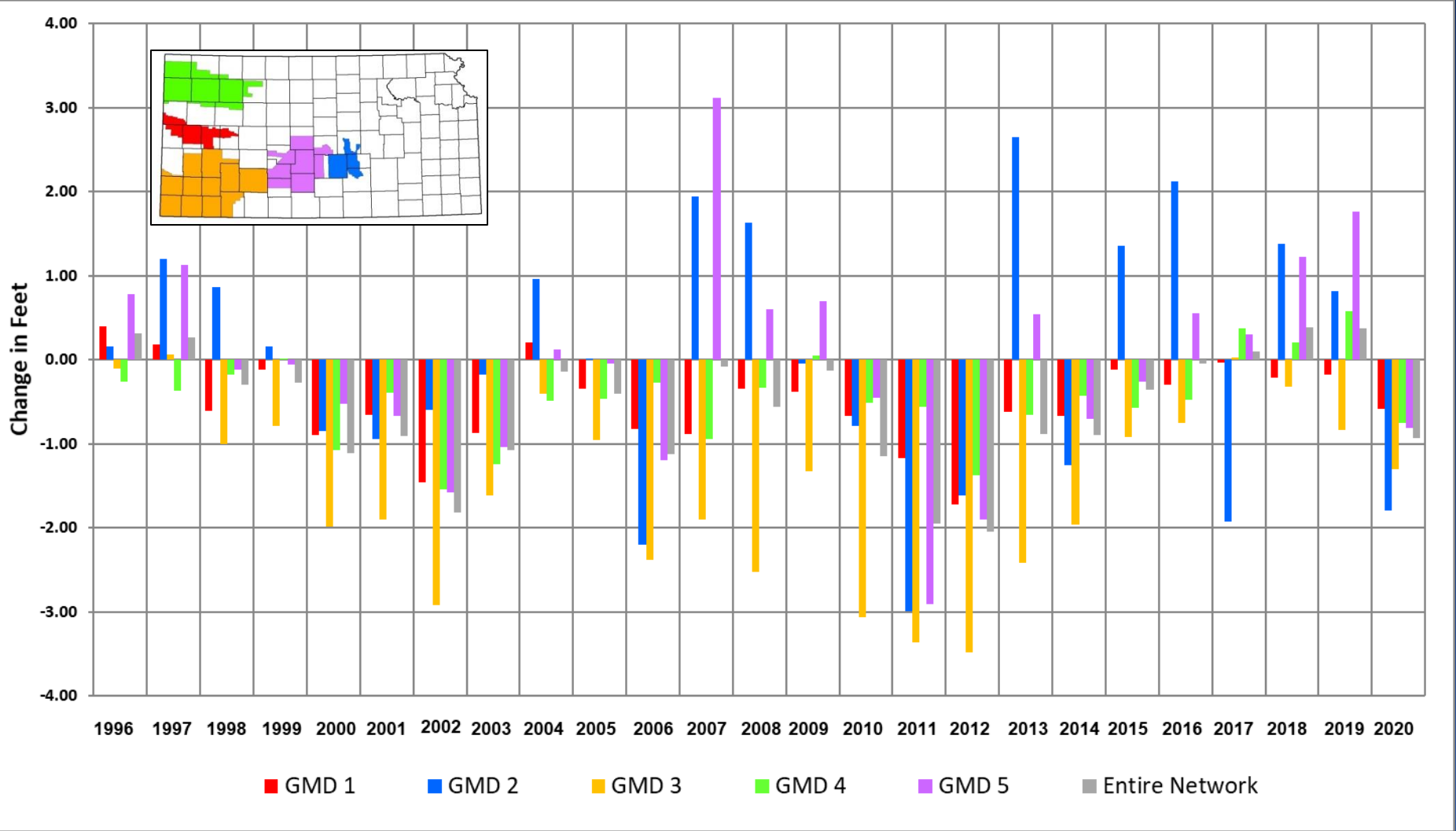
Kansas Geological Survey
University of Kansas

2021 Cooperative Water Level Program

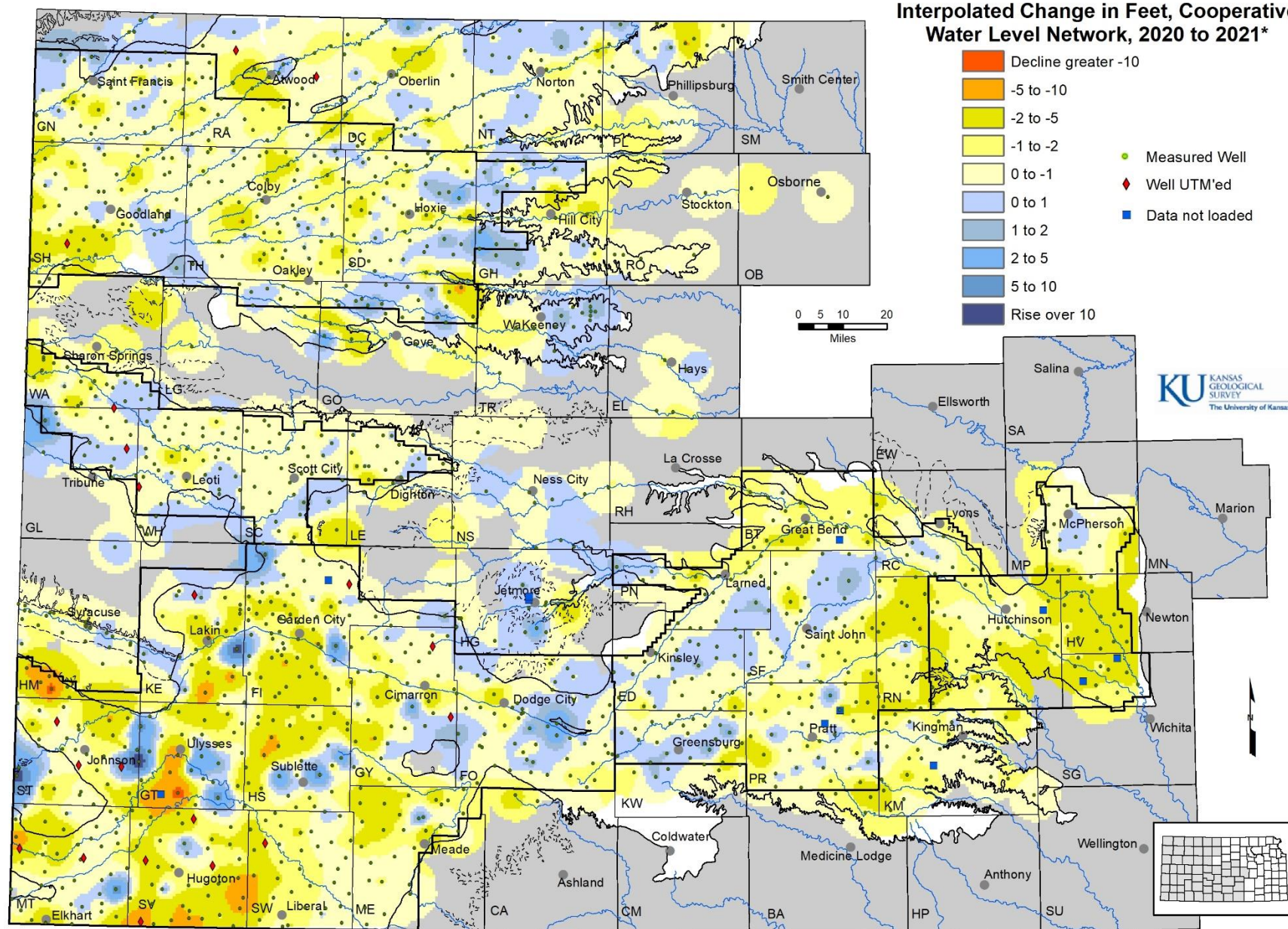


- Upper Smoky Hill RAC**
- 157 wells measured
 - Average 2020 to 2021 water level change = -0.64 ft

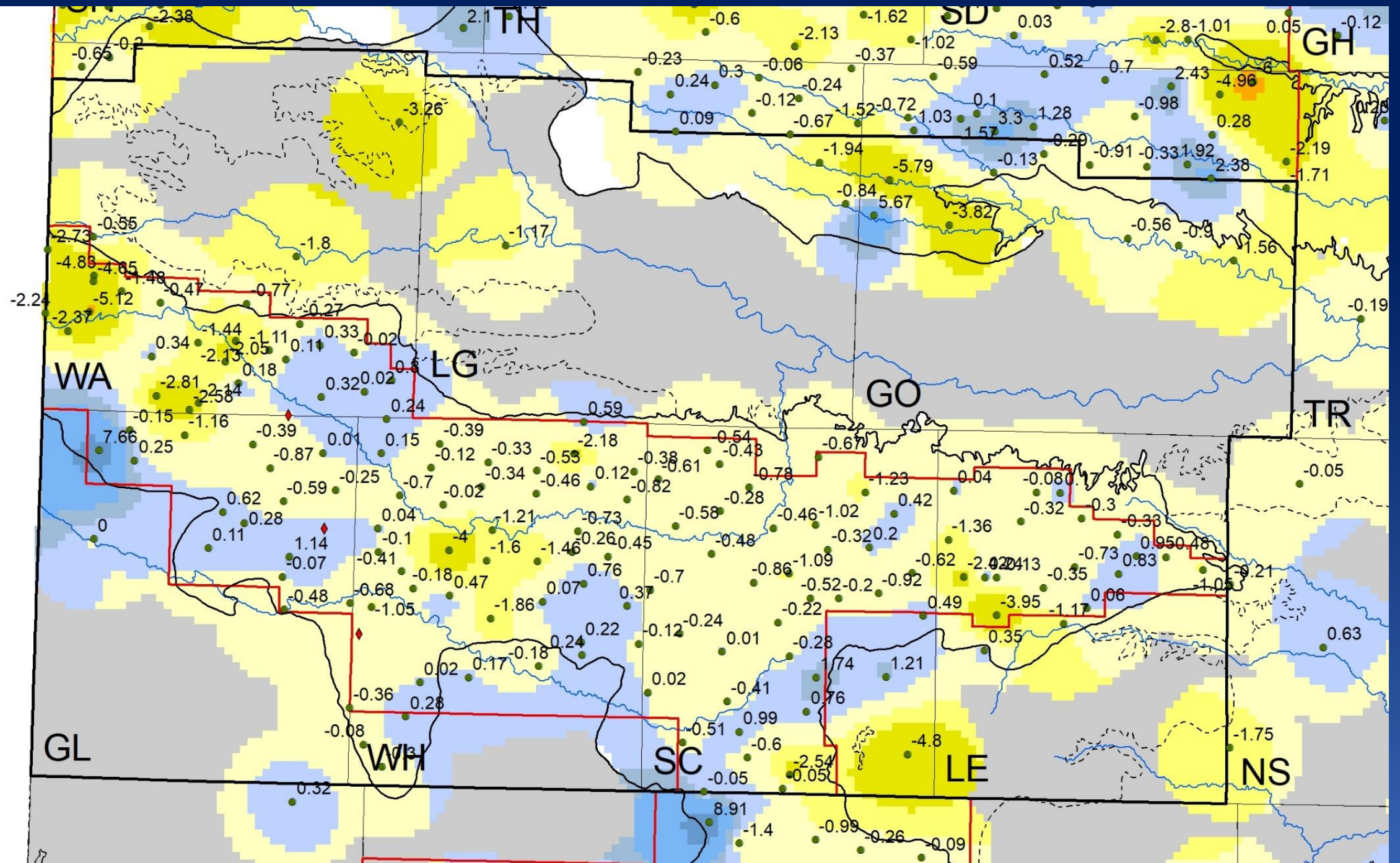
Average Change (by Well)



*Results are based only on the cooperative network (KGS and KDA-DWR) and do not include sub-regional networks from the KDA-DWR, KGS, or local GMDs. 2021 water levels are provisional.



*Results are based only on the cooperative network (KGS and KDA-DWR) and do not include sub-regional networks from the KGS, KDA-DWR or local GMDs.

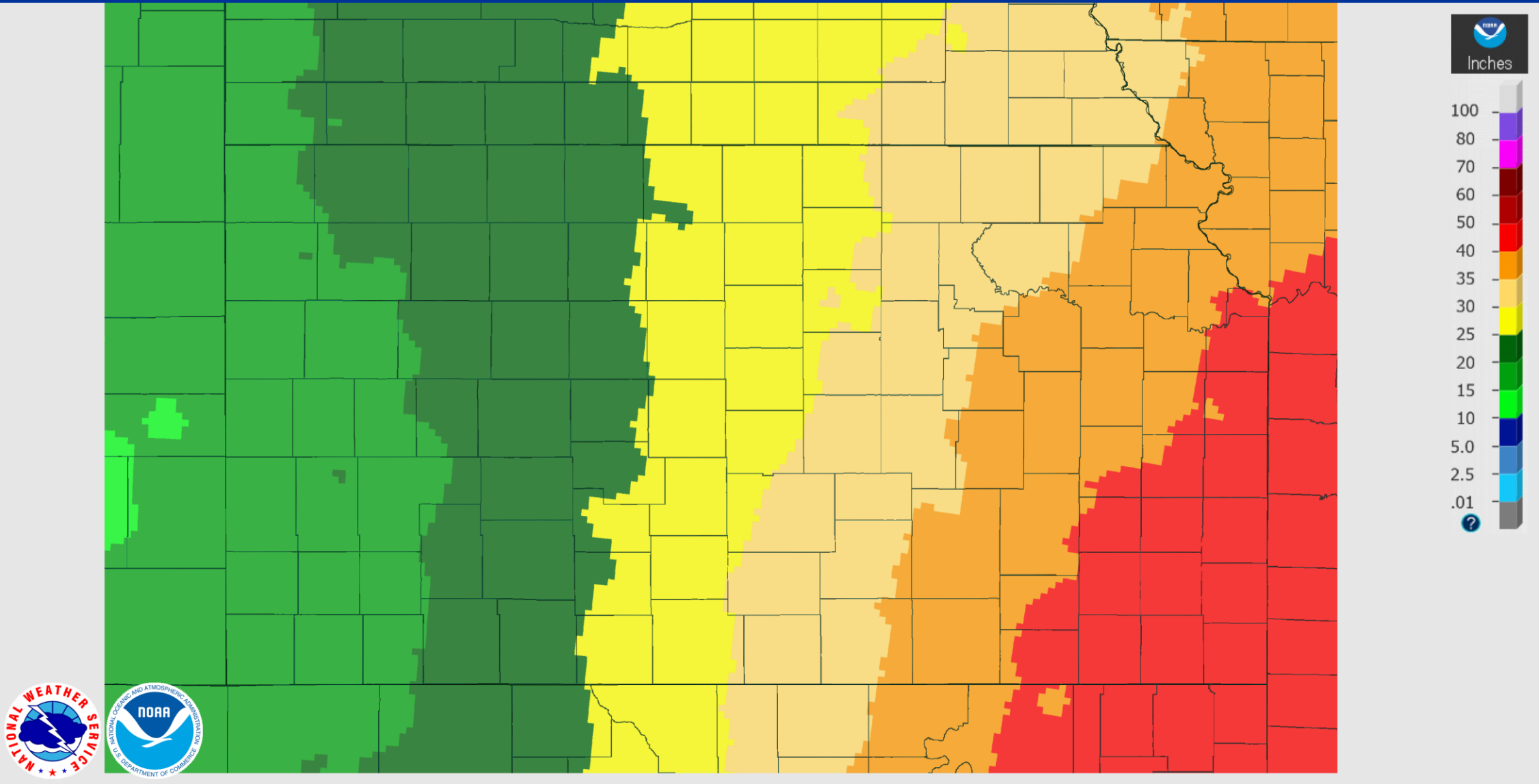


1981 to 2010 Normal Precipitation

January 01, 2020 Annual Normal Precipitation

Created on: January 27, 2021 - 22:02 UTC

Valid on: January 01, 2021 12:00 UTC

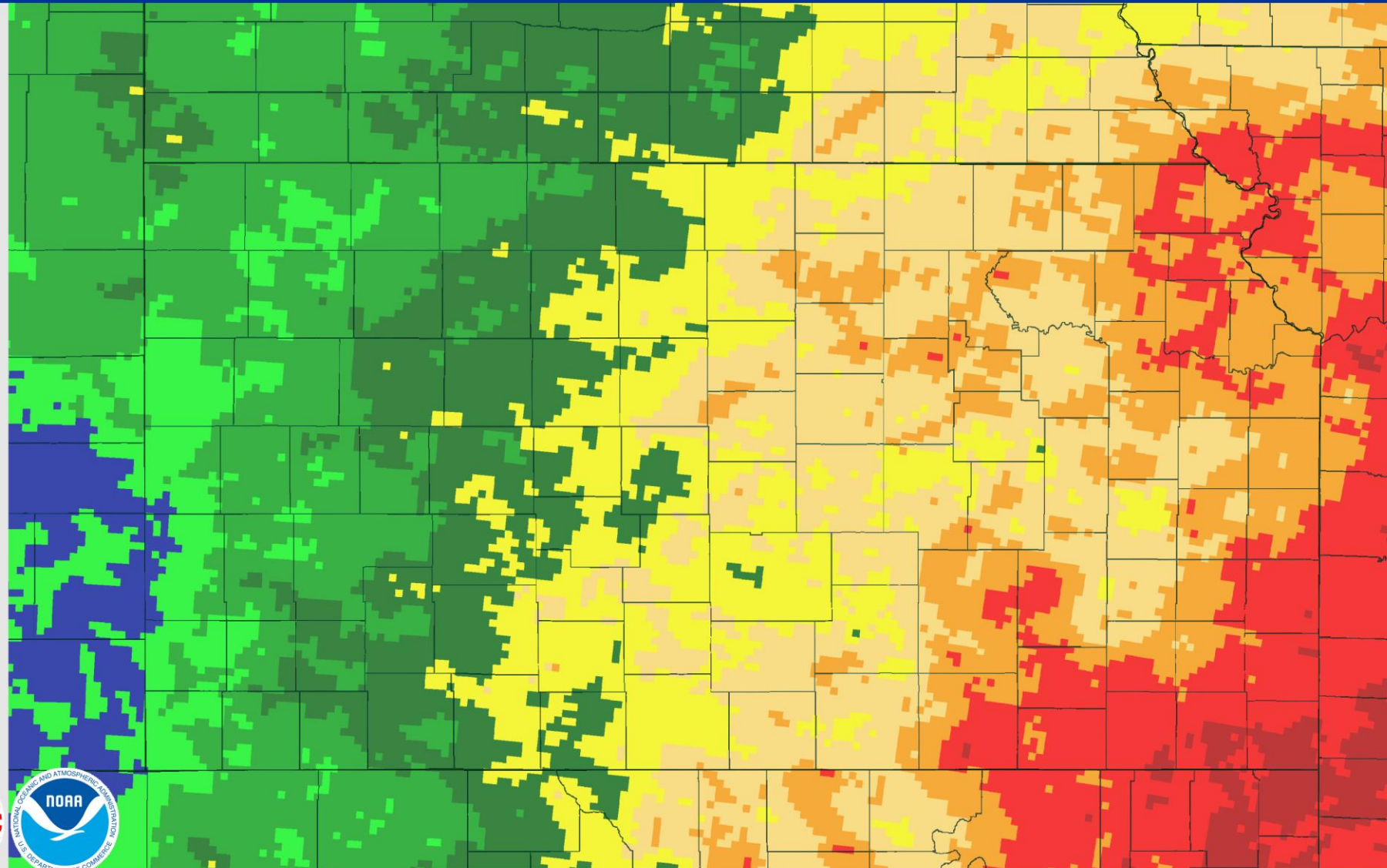


2020 Total Precipitation

January 01, 2020 Annual Observed Precipitation

Created on: January 27, 2021 - 22:02 UTC

Valid on: January 01, 2021 12:00 UTC



100
80
70
60
50
40
35
30
25
20
15
10
5.0
2.5
.01

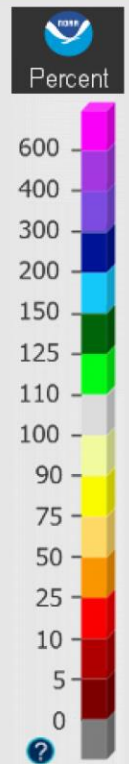
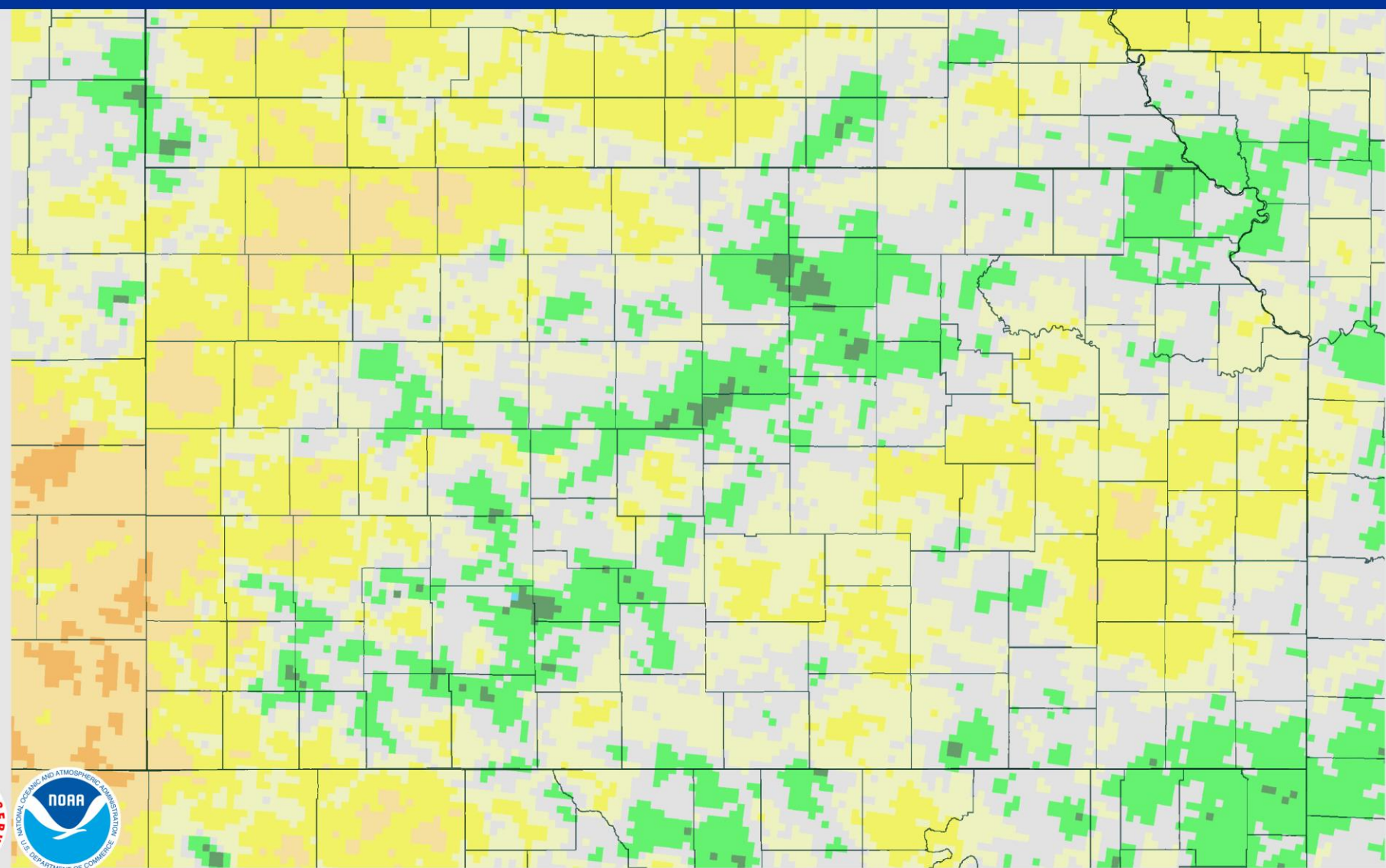


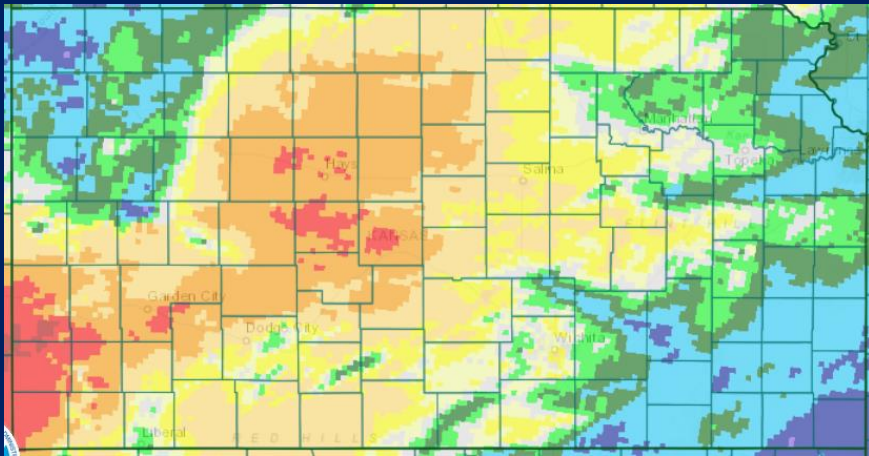
Percent Departure from Normal Precipitation

January 01, 2020 Annual Percent Precipitation

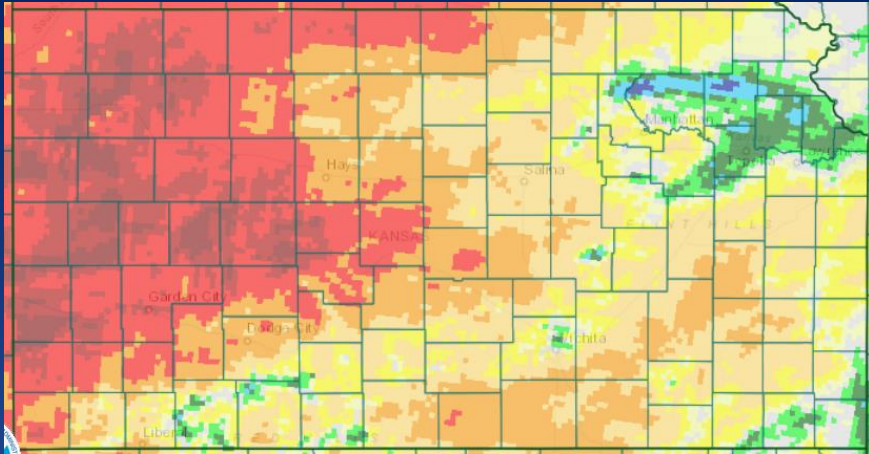
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Valid on: January 01, 2021 12:00 UTC

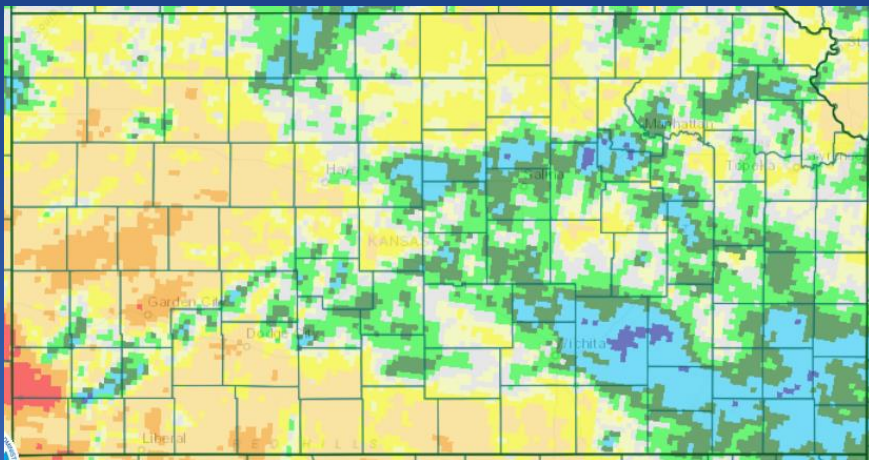




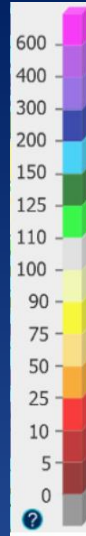
March



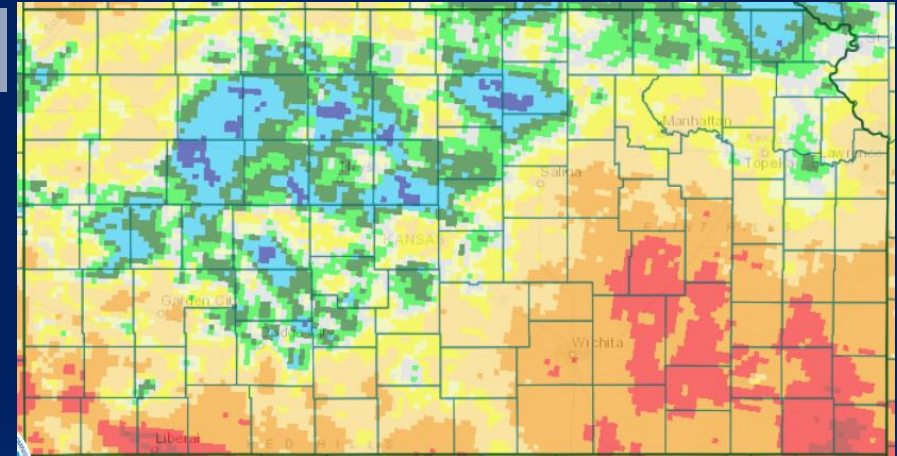
April



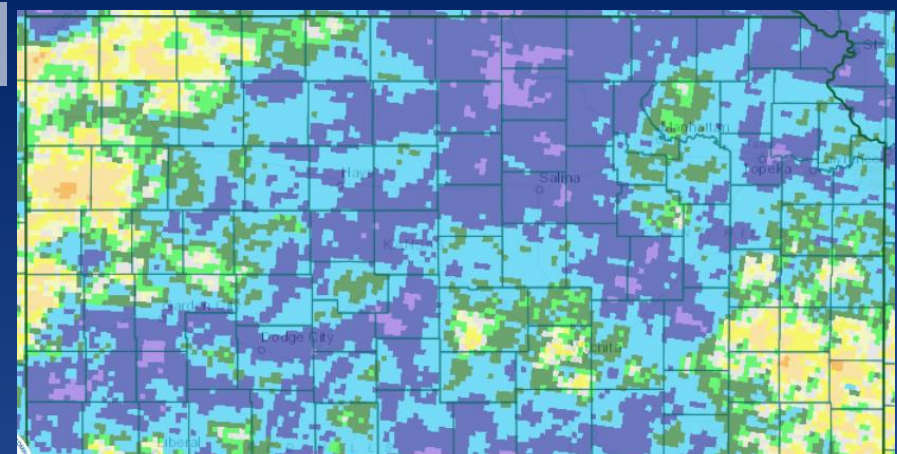
May



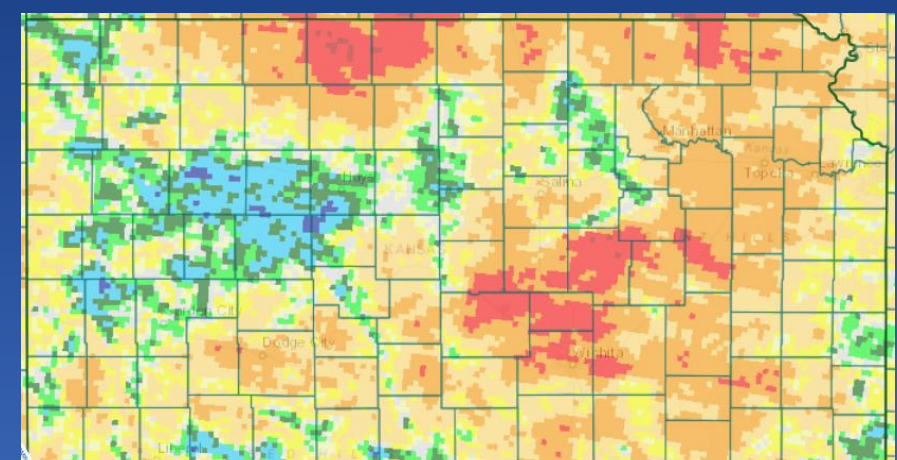
June

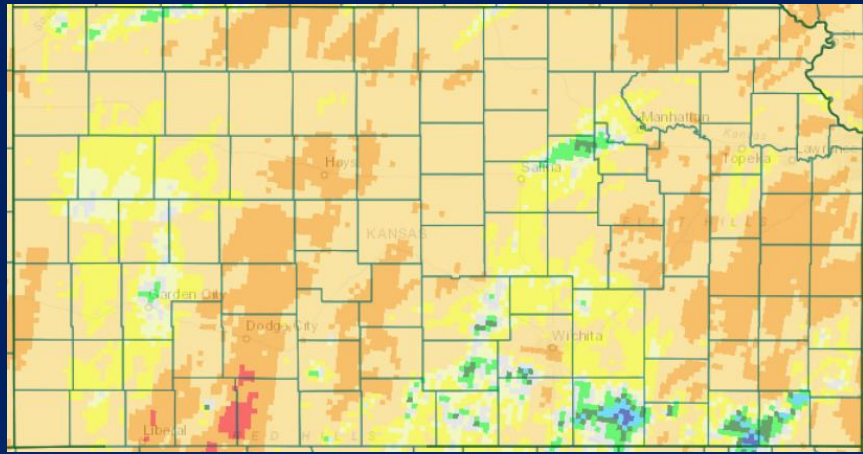


July



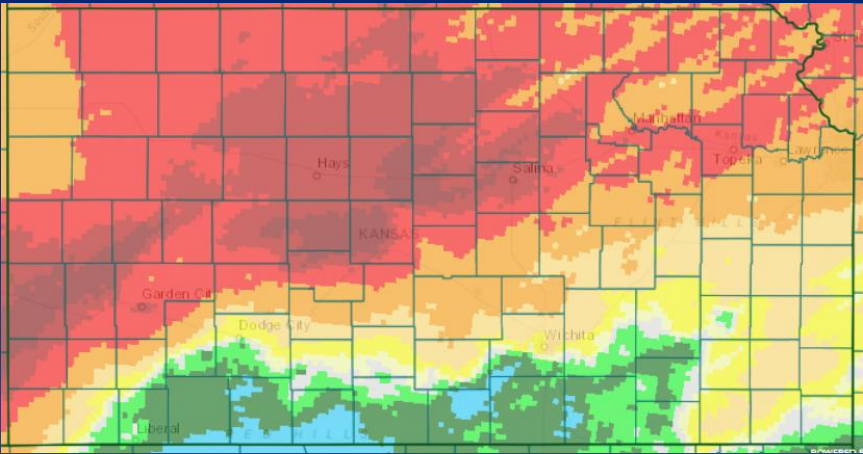
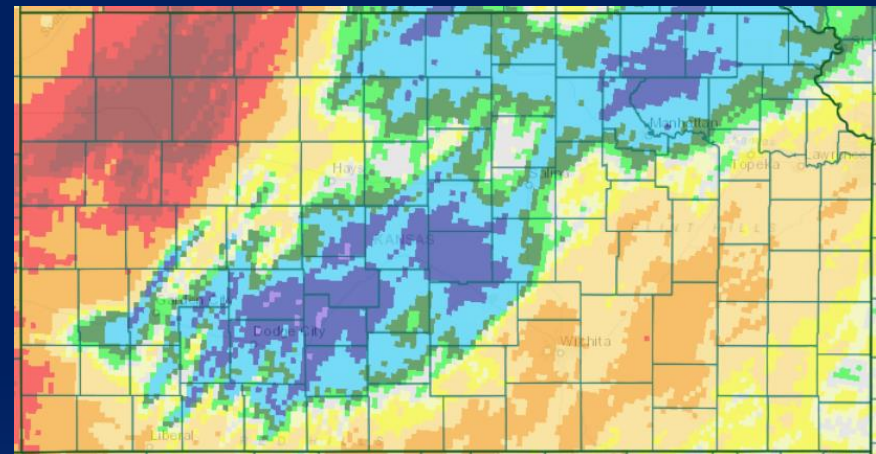
August





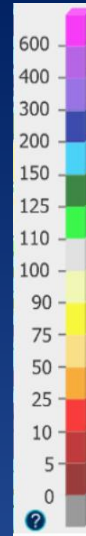
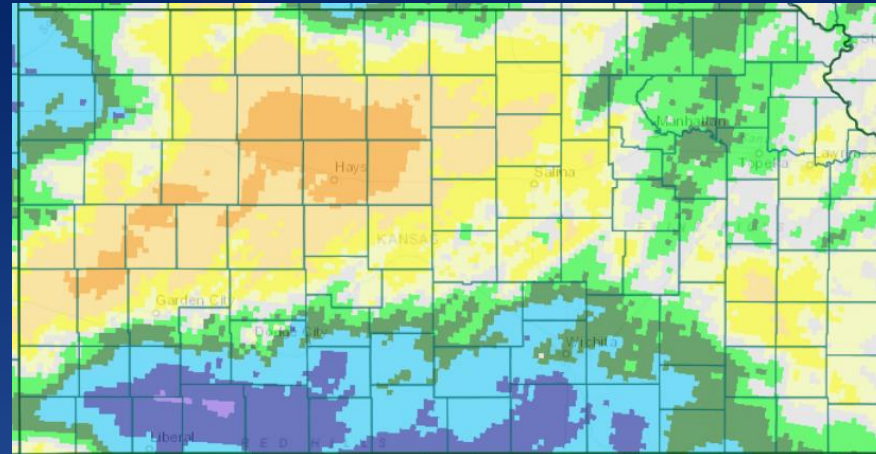
September

November

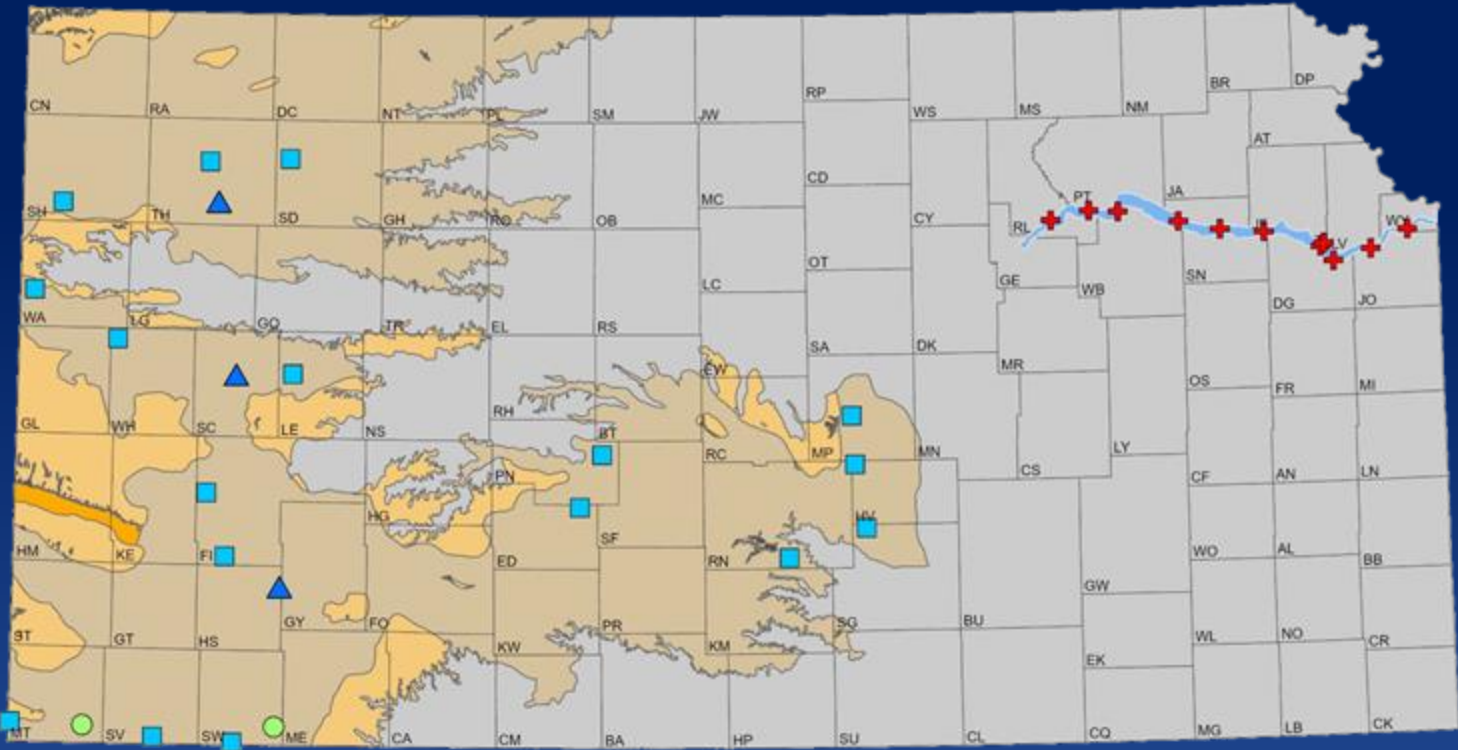


October

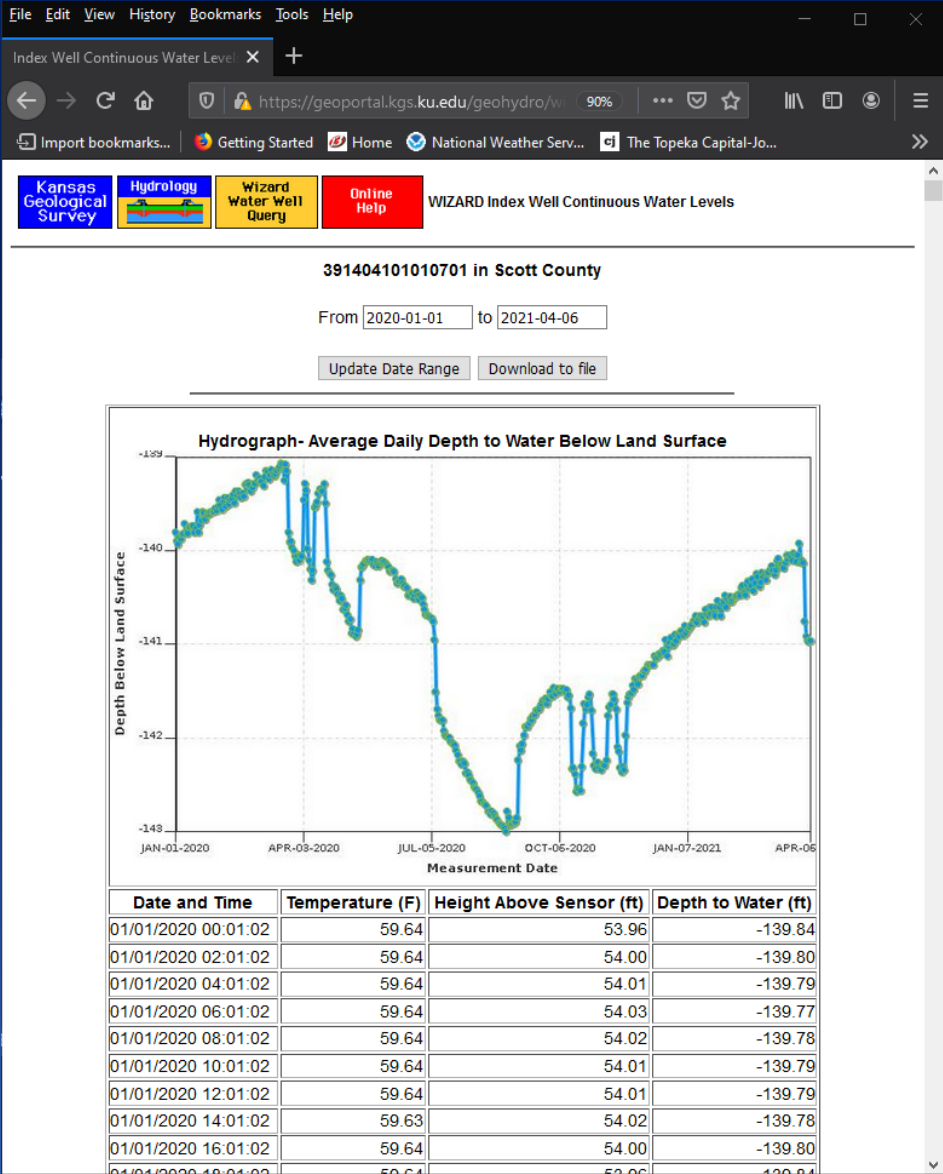
December



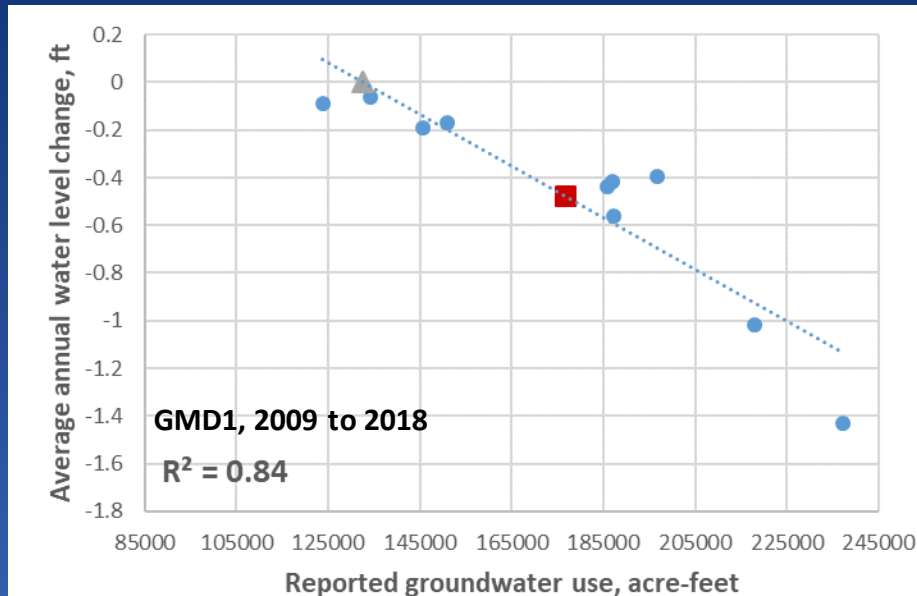
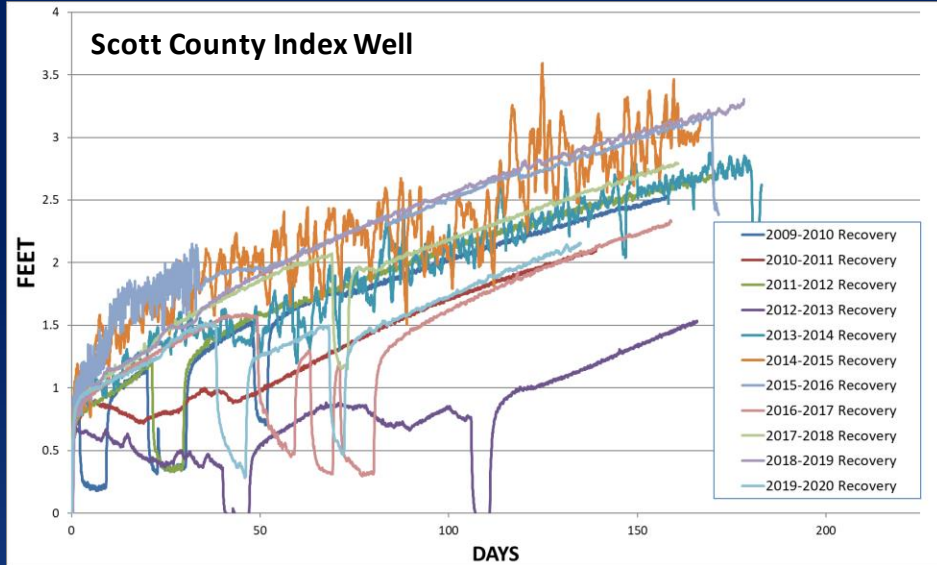
Kansas Index Well Program



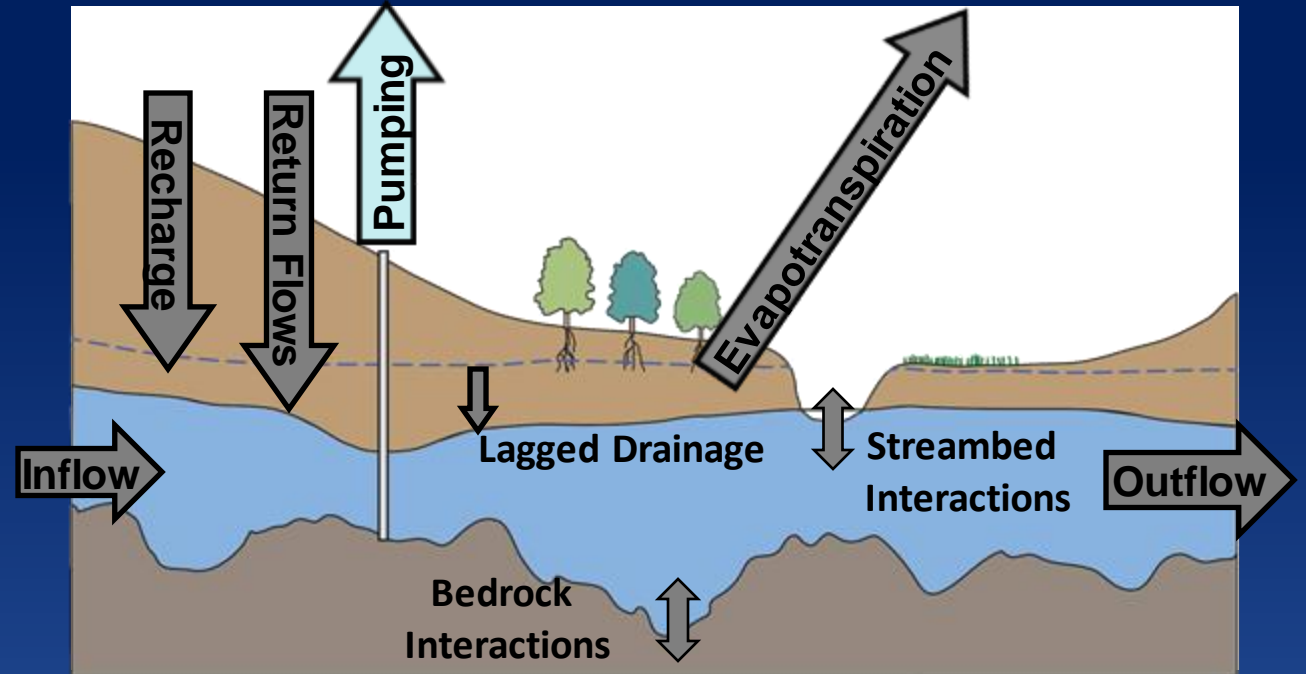
- First wells installed in 2007 through the Kansas Water Plan Fund
- Continuous, real-time water-level recordings
- Characterizations at the local scale



Simple Water Balance- Isolating Water Use and Water-level Change



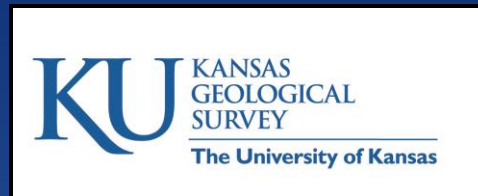
Water Volume Change in Aquifer = Net Inflow - Pumping



- Average use 176,620 AF, Average decline -0.48 ft
- Slope gives use specific yield 7.8 %
- Net inflow average 1.35 inches
- 25% reduction in average use to match stabilized water levels
- Relationship should hold for the next decade or two

Questions????

**Kansas Geological Survey
1930 Constant Ave
Lawrence, KS 66047
785-864-2118**



Visit our site at
<http://www.kgs.ku.edu>

Top Secret Old Preliminary GMD4 Model Results

2020 to 2030

2020 to 2040

2020 to 2050

Status Quo

Status Quo

Status Quo

20% Reduction

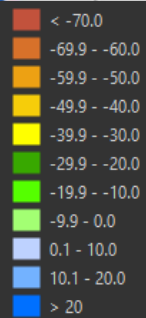
20% Reduction

20% Reduction

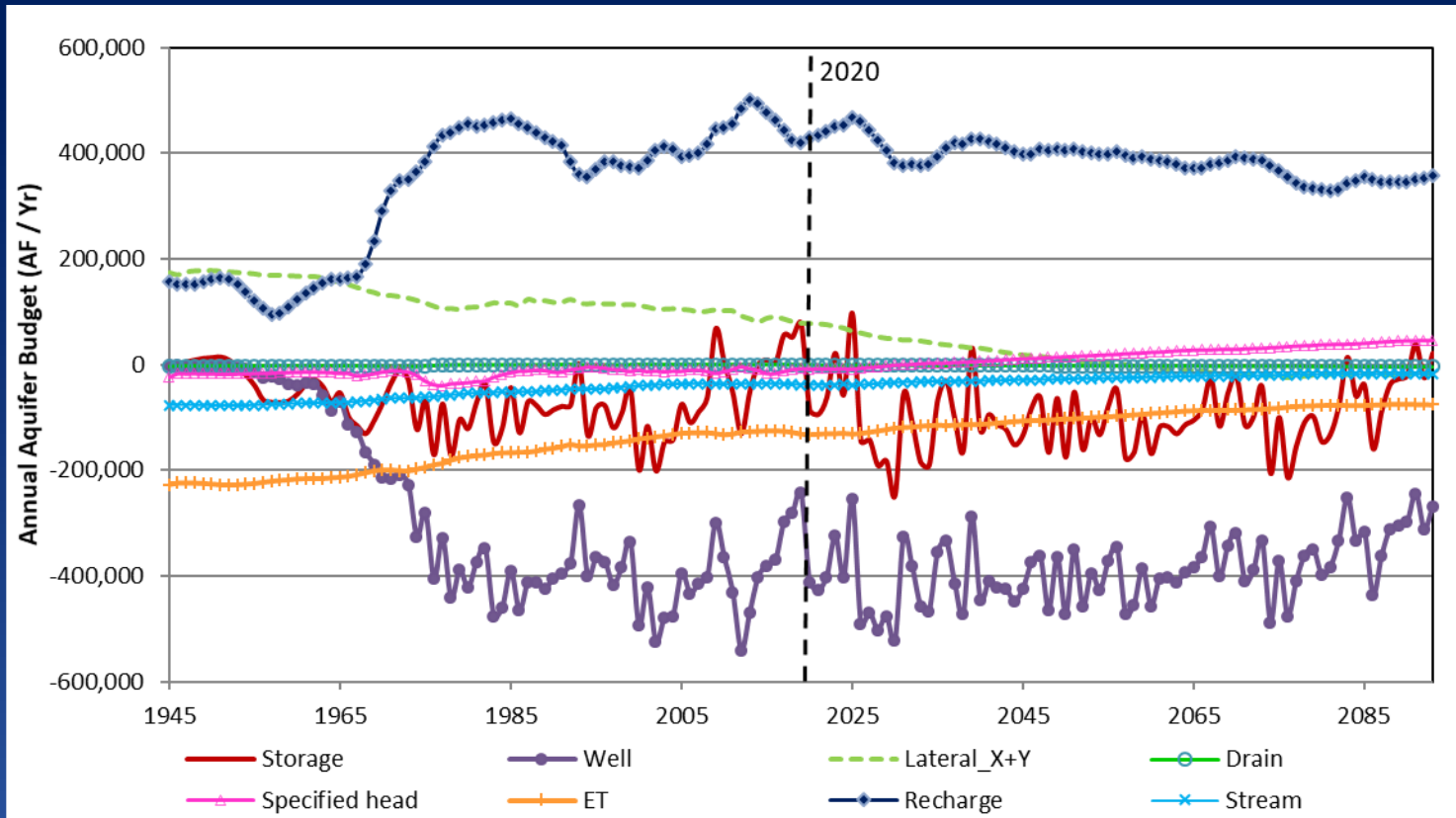
30% Reduction

30% Reduction

30% Reduction

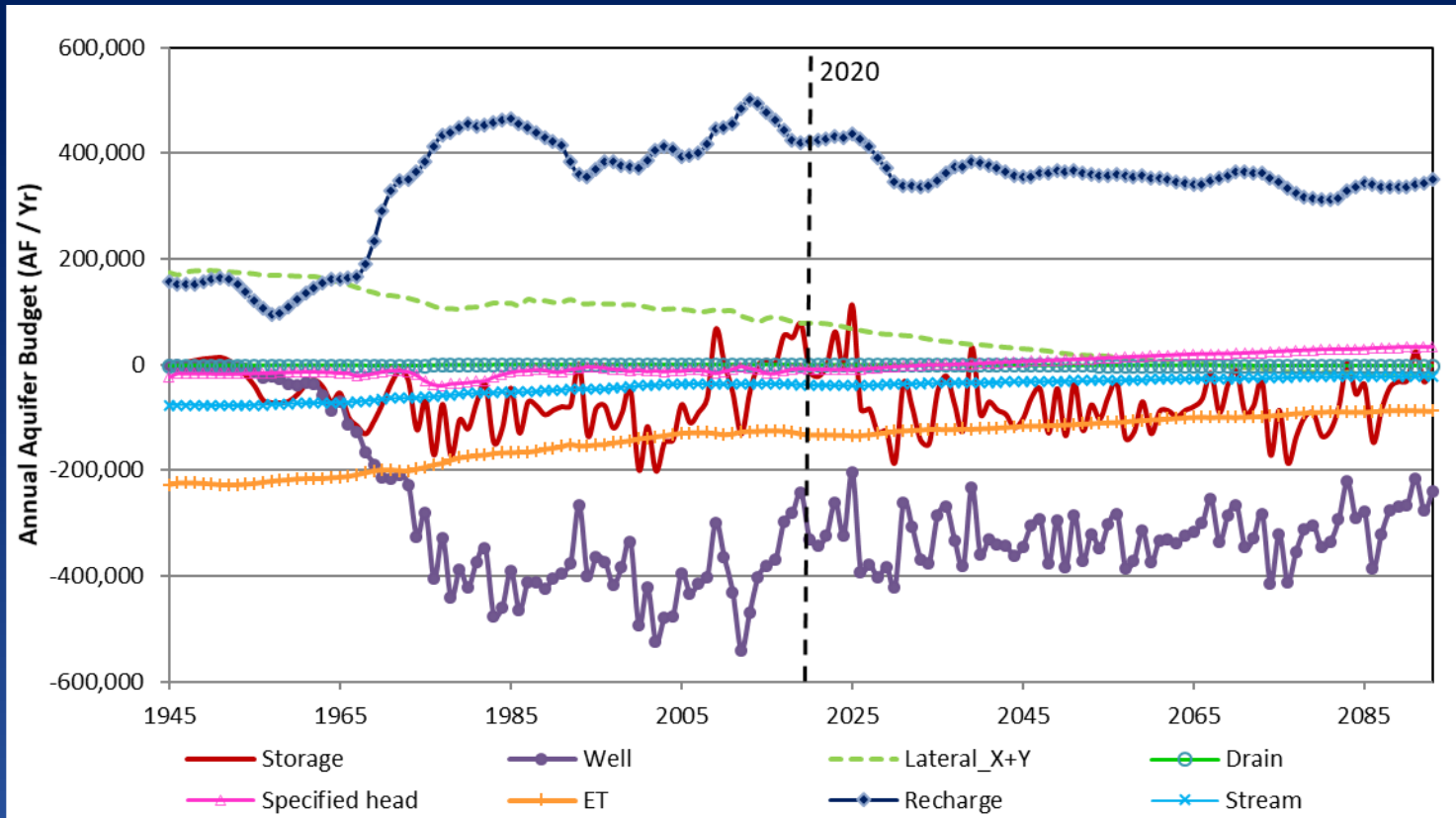


Status quo scenario- budget



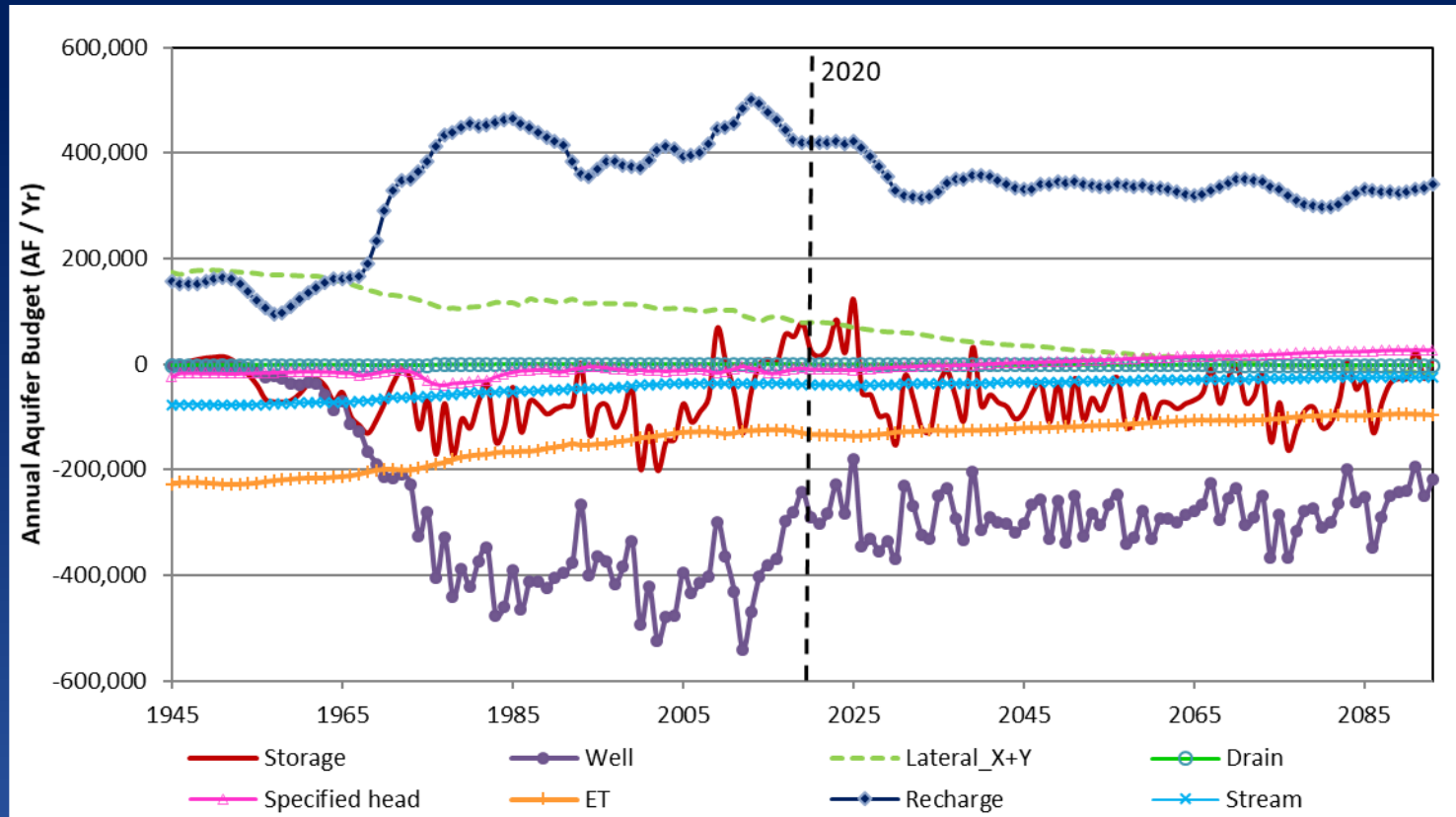
- Recharge relatively static with slight declining trend (~63% higher than predevelopment levels)
- Lateral inflows end in 2057
- Reducing aquifer storage
- Declining rates of ET and pumping

Reduce pumping 20% scenario- budget



- Recharge relatively static but at lower rates (~60% higher than predevelopment levels)
- Lateral inflows end in 2068
- Reducing aquifer storage
- Higher but still declining rates of ET with static levels pumping

Reduce pumping 30% scenario- budget



- Recharge relatively static but at lower rates (~58% higher than predevelopment levels)
- Lateral inflows end in 2074
- Reducing aquifer storage
- Higher but still declining rates of ET with static levels pumping